

OKLAHOMA AGRICULTURAL EXPERIMENT STATION

STILLWATER

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PRESERVING FRUITS FOR EXHIBITION PURPOSES

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The College and Station receive during the summer numerous inquiries from people who desire knowledge as to the best methods of preserving fruits and vegetables for exhibition purposes. There are evidently many people in Oklahoma who have fruit much better than the ordinary and who wish to place this fruit in some permanent form so that others may see what they have.

There are, in general, four requirements for a preserving liquid. First, it must keep the fruit or vegetable—that is it must be antiseptic, keep out all germs of decay and lessen materially if not absolutely prevent all chemical changes breaking down the tissue of the material exhibited. Second, it must not extract the water so as to shrivel the fruit. Third, it must not decolorize the fruit. Fourth, it must be reasonably cheap.

Securing a liquid that will be absolutely antiseptic and remain so for some years is comparatively easy. Alcohol, solutions of sulphurous acid, salicylic acid, formalin, etc., all of which have been used more or less, will prevent the decay of any and all substances immersed in them, for some years at least. Many of these materials have been discarded, but not because they failed to keep the fruit or vegetable.

The question of extracting the water and shrivelling the fruit is of more importance. This is particularly true with the more delicate fruits, the thickness of the skin and stiffness of the tissue immediately below the skin determining, to a large degree, the tendency toward shrivelling. Alcohol, which was at one time much used, has been discarded largely on account of its tendency to cause shrivelling. In general it may be said that the ideal liquid in this respect is one without strong solvent power on the juices of the fruit, and which is also of about the same density or rather osmotic coefficient as the fruit juice itself. With watery solutions of various preserving chemicals, glycer-

ine has quite frequently been added to increase the density of the liquid so as to approximate in density that of the fruit juice.

With many fruits and vegetables the question of decolorization is the most difficult one to meet. The blackberries, the strawberries, raspberries and certain of the cherries show a strong tendency to part with their coloring matter so that the fruit becomes more or less bleached and the preserving liquid becomes so opaque that one cannot see the fruit. What looked in the beginning like a jar of fine blackberries at the end of three weeks looks like a jar of blackberry wine.

The fourth item, that of cheapness, is not of supreme importance. It is, however, well worth considering, particularly as the cheaper solutions are apparently giving the better satisfaction at present. Alcohol, which twenty-five years ago was quite commonly used for preserving, has been discarded, not only because other solutions have been found of superior merit as preservatives, but also because of its almost prohibitive cost.

Apples, pears, most varieties of plums, grapes, quinces and other fruits of this texture, may be readily preserved by covering with a 2 per cent solution of formalin. To make this solution of formalin take 1 part of formalin (which may be bought in pound bottles at the nearest drug store), and 50 parts of clear, soft water. The measurements do not have to be exact, but care should be taken not to have it materially weaker than that prescribed; if it happens to run to 3 or 4 per cent no harm will be done. I have seen pears which had been preserved in this simple solution for five years and which looked at the end of the time quite as natural as the day they were put up.

For peaches, apricots, the softer plums, etc., a 4 per cent solution of formalin, to which 5 per cent of glycerine has been added, will give very satisfactory results.

For strawberries, blackberries, the black or dark red cherries, raspberries and other fruits of a similar nature so far as I know there are no preserving solutions which are wholly satisfactory. These fruits part with their coloring matter so readily that it is very difficult, and with some varieties apparently impossible, to preserve them without extracting some of the coloring matter. In using formalin, strange to say, the stronger solutions seem to extract less of the coloring matter than the weaker ones. Thus 10 or 20 per cent formalin gives better results than that running from 1 to 5 per cent. At times glycerine seems to hinder the decolorizing and at other times, and with other varieties, it appears to actually aid in the extraction of the coloring matter. Best results will be obtained with these fruits if they are placed in a rather strong formalin solution and then after some weeks, if the fluid becomes cloudy, change to a somewhat weaker solution. Some years ago one of our Station investigators found that kerosene would preserve strawberries without extracting the color. Unfortunately the berries in this liquid have a glossy or greasy appearance which is quite unnatural.

Vegetables are usually quite easy to preserve. With the exception of the red beets and one or two other highly colored vegetables they may all be very satisfactorily preserved with the simple 2 per cent formalin solution as recommended for apples, pears, etc.

In selecting specimens of either vegetables or fruits for exhibition purposes, care should be taken to secure those which are well colored but which are still hard and firm. Overripe and soft fruit can never be preserved satisfactorily. They should be placed in the preserving liquid within a few hours of the time when gathered, and should always be gathered when there is no dew on either the fruit or leaves.

In gathering such fruits as apples, peaches, etc., it is better to gather them with somewhat long stems and with, if possible, a leaf or two attached. Such specimens usually appear better than if the fruit alone is shown.

The question of the best kind of exhibition jar is one that is frequently quite perplexing. For the average exhibitor who has but few specimens to show and who does not care to be involved in much expense one of the better class Mason jars will be quite satisfactory. Try and select one with as few flaws in the glass as possible. In case of those who desire something better than the Mason jar, it is recommended that they try the nearest drug store, if only a few jars are desired. If glassware is wanted in quantity it is best to write for prices to some of the larger glass houses, such as Whitall, Tatum & Company of Philadelphia; James G. Biddle, 211 Arch street, Philadelphia; Arthur H. Thomas Company, West Washington Square, Philadelphia; John A. Brashear, Pittsburg; E. H. Sargent, Chicago; Henry Heil Chemical Company, St. Louis, Missouri, and the Emil Greiner Company, Fulton street, New York.

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The following are available publications of the Oklahoma Agricultural Experiment Station:

- No. 66—The Water Supply.
- No. 67—Miscellaneous Water Analyses.
- No. 69—Small Fruits.
- No. 72—Tests of Dips as Lice and Tick Killers.
- No. 75—A Study of the Bacterial Content of Cream.
- No. 87—Corn Culture.
- No. 88—Southern Plum Aphis.
- No. 89—Chemistry of the Kafir Corn Kernel.
- No. 90—A Study of Bermuda Grass.
- No. 91—The Twig Girdler.
- No. 92—Spray Calendar.
- No. 93—Artificial Insemination.
- No. 94—Hog Feeding.
- No. 95—Varieties of Fruits Raised in Oklahoma.
- No. 96—Vitality of Reproductive Cells.
- No. 97—Cotton Culture.
- No. 98—Cotton or Melon Aphis.
- No. 99—Dairying in Oklahoma.
- No. 100—Garden and Truck Crop Insect Pests.

- Circular No. 6—The Bactericidal Properties of Various Disinfectants.
- Circular No. 7—The Value of Cotton Improvement.
- Circular No. 12—Summary of Experiment Station Work.
- Circular No. 13—Selecting an Orchard Site.
- Circular No. 14—Protecting Trees From Rabbits.
- Circular No. 15—Some Types of Silos.
- Circular No. 18—Experiment Station Work.
- Circular No. 19—Spanish Peanuts.
- Circular No. 20—Systems of Planting for Orchards.

Nineteenth and Twentieth Annual Report.

Twenty-First Annual Report.